

### Claims

1. A database system regulating access to one or more data records according to authorized access rights, the database system comprising:
  - one or more data crystals storing one or more data records in an obfuscated format;
  - one or more iterators, each iterator programmed to access, deobfuscate, and return at least one of the one or more data records in response to a data request;
  - one or more queries, each query predefined to receive an indication of an authorized type of data requirement, to request at least one data record from the iterator, and to select from among the returned at least one data record a requested data record satisfying the data requirement; and
  - a key crystal granting access rights for the database system.
2. The database system of claim 1 further comprising an application to provide the indication of the data requirement to the one or more queries, wherein the application has direct access to the one or more queries but not the one or more iterators, the one or more data crystals, or the one or more data records.
3. The database system of claim 2 wherein the application selects among the one or more queries based on the type of data requirement.
4. The database system of claim 1 wherein the obfuscated format is chosen from the group consisting of: compression, encryption, XOR operations, and general bit order or bit logical manipulation.
5. The database system of claim 4 wherein the obfuscated format is compression so as to reduce memory requirements for the storing of the one or more data records.
6. The database system of claim 1, further comprising an iterator interface corresponding to a specific iterator and a corresponding data crystal; and
  - wherein:
    - the iterator interface acts as a buffer between the one or more queries and the corresponding iterator; and
    - the iterator interface allows the queries to work with a different version of the specific iterator and corresponding data crystal.
7. The database system of claim 1, further comprising an access key for interchangeably enabling or disabling the system.

8. The database system of claim 7 wherein the access key is a hardware dongle.

9. The database system of claim 7 wherein the access key is a software component.

10. The database system of claim 1 wherein at least one data record includes a link to an external storage location.

11. The database system of claim 1 wherein at least one of the one or more data records includes unobfuscated clear text.

12. The database system of claim 1 wherein:  
the one or more data records include a first data record and a second data record;

the first data record employs a first obfuscated format and the second data record employs a second obfuscated format; and

the second obfuscated format is different than the first obfuscated format.

13. The database system of claim 1 further comprising a viewer to view a select data record without enabling full access to all of the one or more data records.

14. The database system of claim 1 wherein the one or more data crystals, the one or more iterators, and the one or more queries are deployed at an unsecured customer location.

15. The database system of claim 1 wherein each iterator corresponds to only one of the one or more data crystals.

16. The database system of claim 1 wherein a first query can call a second query to employ at least one of the one or more iterators.

17. A controlled access database system comprising:  
a plurality of data crystals, each data crystal containing at least one data record employing an obfuscation technique;

an iterator programmed to access the at least one data record according to the obfuscation technique;

at least one query of a predefined type:

wherein one or more of the at least one query is called by an application with a data requirement;

wherein the data requirement of the application determines the one or more called query; and

wherein the one or more called query employs the iterator to access the at least one data record; and  
a key crystal granting access rights to the database system.

18. The database system of claim 17 wherein the key crystal authorizes access to a specific data crystals out of the plurality of data crystals, wherein the specific data crystal is authorized for the application.

19. The database system of claim 17 wherein the key crystal authorizes access to a specific query out of the at least one query, wherein the specific query is authorized for the application.

20. The database system of claim 17 wherein a first query can call a second query to employ the iterator.

21. A method for building a controlled-access database for preventing unauthorized access to data records, the method comprising the steps of:

obtaining a data record;

storing the data record in a data crystal in an obfuscated format;

providing an iterator to access and deobfuscate the obfuscated data record;

providing a query to request the iterator to locate and access the data record only in accordance with a preauthorized type of data requirement; and

providing a key crystal authorizing use of the data crystal and the query according to the preauthorized type of data requirement.